

Hazardous Substance Management Research Center (HSMRC)

New Jersey Institute of Technology

The nation's largest university-based hazardous waste management research program is in place at the Hazardous Substance Management Research Center

Center Mission and Rationale

The Hazardous Substance Management Research Center (HSMRC) is a consortium of six academic institutions headquartered at the New Jersey Institute of Technology (NJIT). The participating institutions are NJIT, Princeton University, Rutgers University, Stevens Institute of Technology, Tufts University, and the University of Medicine and Dentistry of New Jersey. The Center is a member of the Advanced Technology Center program of the New Jersey Commission on Science and Technology.

Through its industry-university collaborative research, the Center has contributed since 1984 to advanced engineering management of hazardous substances, developing new management technologies and testing and evaluating existing technologies to assess their operating ranges and performance capabilities. The researchers at HSMRC also are building a database to identify effective, environmentally safe, and economically viable hazardous waste treatment and remediation technologies. This database and the technologies developed through the Center's research are expected to —

- Assist industry to minimize, treat, and manage hazardous waste
- Furnish the technology to identify and remediate hazardous substance spills and burial sites
- Facilitate technology transfer between industry, Government, academia, and the public

Research Program

The Center operates through seven divisions:

- **Biological and Chemical Treatment Division** — Aims to produce effective and efficient biological and chemical treatment technologies
- **Health Effects Assessment Division** — Conducts research on the effects of hazardous substances in the environment on human health, with an emphasis on multi-chemical mixtures
- **Incineration Division** — Seeks to broaden the use of thermal destruction processes
- **Monitoring and Assessment Division** — Conducts research and development on innovative field assessment and monitoring technologies; designs and develops programs that will enhance the technology transfer rate
- **Physical Treatment Division** — Develops information on physical treatment processes to irreversibly transform hazardous substances into nonhazardous forms, or to isolate hazardous materials for later treatment
- **Public Policy and Education Division** — Performs research on how hazardous substance public policy



Dr. Robert Barat working on laser-induced fluorescence in a flat flame

is formed and implemented and on how public education regarding hazardous substance issues can be improved

- **Site Assessment and Remedial Action Division** — Assesses the public health and environmental hazards of existing and proposed hazardous and solid-waste disposal sites and develops cost-effective technologies to remediate contaminated sites.

Special Center Activities

The Center participates in domestic and international research programs and a range of educational programs. HSMRC collaborates with the Environmental Protection Agency's (EPA) Northeast Hazardous Substance Research Center (NHSRC) headquartered at NJIT, the Emission Reduction Research Center at NJIT, and the EPA Center for Airborne Organics (headquartered at the Massachusetts Institute of Technology). These centers share a common pool of researchers and work in close cooperation on a variety

A National
Science
Foundation
Industry/
University
Cooperative
Research
Center
since 1984



Pneumatic fracturing injector in place and operational at a demonstration site

of hazardous waste and environmental issues.

Center-developed technologies are currently under evaluation in the EPA Superfund Innovative Technology Evaluation Demonstration Program, at various Department of Energy (DoE) and Department of Defense (DoD) installations, at industrial sponsor sites, and in conjunction with the New Jersey Department of Environmental Protection.

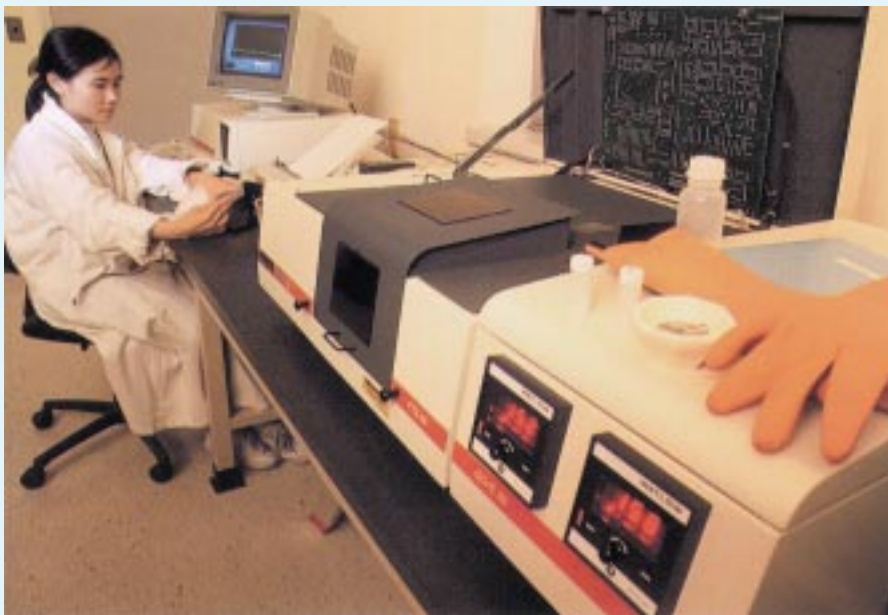
In collaboration with the EPA NHRSC, Center researchers are conducting

collaborative research with faculty at minority academic institutions, providing research and retraining for DoD military and civilian personnel who have been displaced because of base closings and realignments, and providing technical expertise to communities affected by hazardous waste sites.

HSMRC also performs collaborative research with industry/university research centers in Ireland and France and is working with colleagues at the University of Indonesia, Khon Kaen University in Thailand, and the University of the Philip-

pines to develop similar industry/university cooperative research centers in the environmental areas in those two countries and to develop student and faculty exchange programs.

The Center participates in several educational programs in engineering and science, including Young Scholars; Teacher Enhancement Projects; Research at Undergraduate Institutions; and the Women, Minority, and Disabled High School and Undergraduate Engineering Research Assistants program.



Research student performing gas analysis using the Analytical Laboratory's Gas Chromatograph/Mass Spectrometer

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